

REMARKS

Claims 1-4, 8-16 and 22-25 have been rejected. After entry of the present amendment, claims 8-10, 14, 15 and 22-32 are pending.

Amendments

Claims 1-4, 11-13, and 16 have been cancelled without prejudice in the present amendment to expedite prosecution. Claims 14, 15 and 22-25 have been amended to convert these claims to method claims depending from claim 8. Claims 26-32 are newly presented, and find antecedent basis in previously presented claims as follows:

New claim	Finds support in previously presented claim
26	3
27	3
28	4
29	16
30	16
31	16

Newly presented method claim 32 finds antecedent basis in the original specification at paragraph [0027].

It is respectfully submitted that the present amendments do not introduce new matter.

Claim Rejections – 35 USC § 103

Claims 1, 2, 4, 8, 10-14 and 16 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Smail, for the reasons set forth in the previous Office Action.

Claim 3 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Smail, in view of Smith, for the reasons set forth in the previous Office Action.

Claims 9 and 15 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Smail, in view of Baking 911, for the reasons set forth in the previous Office Action.

Claims 22-25 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Smail, in view of Nutra USA, for the reasons set forth in the previous Office Action.

It is noted that the previously presented claims were rejected under section 103 of the statute as being obvious, and not under section 102 as being anticipated. The criterion for determination of obviousness in this case is therefore whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success in view of the prior art. In re Dow Chemical Co., 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). The analysis of obviousness is based on consideration of whether the claimed invention *as a whole* would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 218 USPQ 871, 877 (Fed. Cir. 1983).

As noted in the specification at paragraph [0003], acrylamides are formed as a result of the Maillard reaction between amino acids and reducing sugars. See also Mottram, et al, "Acrylamide is formed in the Maillard reaction." Nature, Vol. 419, 3 October 2002, p.448. Reducing sugars are sugars such as glucose that contain a ketone or aldehyde group. See the Wikipedia entry on "reducing sugars."

The present claims as amended are drawn to an invention based on recognition that cyclodextrins uniquely will interfere with the formation of acrylamides in food products and food intermediates under heating conditions that ordinarily will promote acrylamide formation. Having discovered unique and unexpected properties in a small class of compounds, applicants have developed a method wherein acrylamide formation is prevented by topically applying a composition containing cyclodextrin to a food that is to be heat treated. As noted in the specification at paragraphs [0019] and [0035], it is believed that the present invention operates by sequestering the starting materials that form acrylamides during heating in the hydrophobic binding pocket of cyclodextrin. Thus, the surprising ability to prevent acrylamide formation in foods through topical application is directly related to the unique chemical structure of cyclodextrins.

Smail discloses an unbaked dough product that comprises a dough mixture with part of the outer surface coated with a pre-glaze composition of a complex sugar. The sugars used in these compositions are mono- or di-saccharides, or polysaccharides. Most of the sugars in this list are reducing sugars. In the long list of possible sugars, cyclodextrins are listed at paragraph [0011]. The sugars used in the compositions

actually prepared by Smail are different chemically from the required cyclodextrin of the present claims, because the Smail prepared compositions do not contain a sugar having a cyclic structure. Since the Smail compositions actually prepared do not have the necessary structure, they CANNOT achieve the object of the present claims - to prevent formation of acrylamides. To the contrary, the Smail composition instead would be expected to promote formation of acrylamide, because Smail teaches incorporation of glucose and polydextrose, both reducing sugars that are starting materials in the acrylamide formation reaction.

The advantageous properties exhibited by the compositions of the present invention are not merely newly identified properties that would flow naturally from the prior art. Rather, the compositions as claimed require use of materials that exhibit properties that cannot be exhibited by most of the Smail compositions, particularly including the preferred prior art compositions. Thus, the presently claimed compositions provide benefits that cannot be obtained by the preferred Smail compositions.

The present method solves a problem that not only is not recognized by Smail, but which cannot be solved by following the teaching of Smail in using the compositions preferred in that reference. Thus, the result of the present reference as compared to that obtained by using the compositions actually used in Smail is not merely recognition of a property that differs from the prior art in degree, but which produces a discovery of a new and unexpected result which is different in kind from that which could be obtained from the prior art. See In re Aller, 105 USPQ 233 (C.C.P.A. 1955).

Turning now to the secondary references, it is respectfully submitted that these references fail to bridge the gap or provide teaching or the necessary motivation to conduct the method of the present claims.

As noted above, Smail describes coating compositions comprising sugar to provide a glaze to baked dough compositions. Smith is cited for the purpose of disclosing spray glaze provided in aerosol containers. The compositions of the spray glazes of the Smith disclosure are egg wash substitutes prepared by blending maltodextrin with a plasticizer, a secondary film former, water and preferably a microbial inhibitor. The Smith reference is silent with respect to the use of a cyclodextrin as an

ingredient of a coating composition. It is respectfully submitted that the combination of these references does not render obvious the method of claim 8, even when carried out using a spray.

Baking 911 is cited to teach the concept of partially baking food products. This disclosure is limited to partially pre-baking a single crust pie or tart without the filling, brushing with a glaze (wherein the glaze composition is not specified), and reheating to set.

It is respectfully submitted that the Baking 911 reference fails to bridge the gap, noted above, between the Smail disclosure and the present claims. Baking 911 provides no motivation, alone or in combination with Smail, to formulate a composition comprising cyclodextrin for topical coating of food products, and one could not have predicted the surprising benefit of reduction of acrylamide by use of a coating composition comprising cyclodextrin as presently claimed.

The Nutra USA publication is cited for its disclosure of alpha cyclodextrin as a non-digestible, fully fermentable dietary fiber. This reference is merely an announcement by Wacker Specialties of the production of this material on a commercial scale, and does not discuss relative preferred use of this material as compared to any complex sugar in any use, much less the use as described in Smail. Neither Smail nor Nutra USA teach or suggest use of a cyclodextrin composition for reduction of acrylamide by topical application to food products that are to be heated. Thus, it is respectfully submitted that the present claims are patentable in view of the prior art of record.

Separate Argument for Patentability of New Claim 32

In particular, it is respectfully submitted that newly presented claim 32 is particularly unobvious in view of the cited references. New claim 32 is directed to a method wherein a food product or intermediate is provided by a product supplier with instruction for applying the composition by a third party applicator for remote consumer or commercial application, and the composition is applied by the third party applicator prior to subjecting the food product or food intermediate to heating of at least 100°C.

Thus, this claim is directed specifically to application of the acrylamide formation prevention composition at the site remote from the initial product manufacture site. This claim thus encourages application of the composition at the site of baking (which is likely at the point of sale). This method is in stark contrast to the object of Smail, which is to provide a dough product with a pre-coating of glaze as part of the off-site manufacturing process to assure correct application and to avoid application of the glaze after baking. See Smail, paragraphs [0002] and [0006]. The method as claimed in new claim 32 is thus completely contrary to the teachings of Smail, and is clearly patentable thereover.

Conclusion

In view of the amendments and remarks provided herein, Applicants respectfully submit that all of the pending claims are in condition for allowance, and respectfully request notification thereof.

In the event that a phone conference between the Examiner and the Applicants' undersigned attorney would help resolve any remaining issues in the application, the Examiner is invited to contact the attorney at (651) 275-9811.

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